

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 3288-4 (1986): Glossary of Terms Relating to Copper and Copper Alloys, Part 4: Processing [MTD 8: Copper and Copper Alloys]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



Indian Standard

GLOSSARY OF TERMS
RELATING TO COPPER AND COPPER ALLOYS

PART 4 PROCESSING

(First Reprint MAY 1997)

UDC 001.4 : 669.3.02

© *Copyright* 1987

BUREAU OF INDIAN STANDARDS

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG

NEW DELHI 110002

Indian Standard

GLOSSARY OF TERMS

RELATING TO COPPER AND COPPER ALLOYS

PART 4 PROCESSING

Copper and Copper Alloys Sectional Committee, SMDC 11

Chairman

DR L. R. VAIDYANATH

Representing

Indian Copper Development Centre, Calcutta

Members

| | |
|---|--|
| SHRI D. DE SARKAR (<i>Alternate to</i> Dr L. R. Vaidyanath) | |
| ADDITIONAL DIRECTOR (MET), M & C DIRECTORATE, RDSO, LUCKNOW | Ministry of Railways |
| SHRI DEV KUMAR AGGARWAL | Bralco Metal Industries Pvt Ltd, Bombay |
| SHRI RAJ KUMAR AGGARWAL (<i>Alternate</i>) | |
| SHRI BACHITAR SINGH | Ministry of Defence [DGI/DPI (N)] |
| SHRI M. R. ACHARYA (<i>Alternate</i>) | |
| SHRI R. T. BAJAJ | Kamani Tubes Ltd, Bombay |
| SHRI K. L. BARUI | National Test House, Calcutta |
| SHRI H. P. DUBEY (<i>Alternate</i>) | |
| SHRI J. NEGESH BHATT | Indian Telephone Industries Ltd, Bangalore |
| SHRI A. R. SUKUMARAN (<i>Alternate</i>) | |
| SHRI C. D. BHATTACHARYA | Hindustan Cables Ltd, Burdwan |
| SHRI M. JHA (<i>Alternate</i>) | |
| SHRI BALKRISHNA BINANI | Rashtriya Metal Industries Ltd, Bombay |
| DR V. S. PATKAR (<i>Alternate</i>) | |
| PROF A. D. BOHRA | Alcobex Metal (P) Ltd, Jodhpur |
| SHRI KULDEEP DHINGRA (<i>Alternate</i>) | |
| SHRI M. K. CHOUDHURY | Bengal Ingot Co Ltd, Calcutta |
| SHRI P. R. DHAR | Indian Standard Metal Co Ltd, Bombay |
| SHRI N. R. MANIAR (<i>Alternate</i>) | |
| SHRI B. DUTTA | Directorate General of Ordnance Factories, Calcutta |
| SHRI S. K. GHOSH (<i>Alternate</i>) | |
| SHRI A. V. HARNE | Bharat Heavy Electricals Ltd |
| SHRI P. V. DIXIT (<i>Alternate I</i>) | |
| SHRI M. N. CHANDRASEKHARIAH (<i>Alternate II</i>) | |

(Continued on page 2)

© Copyright 1987

BUREAU OF INDIAN STANDARDS

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(Continued from page 1)

| <i>Members</i> | <i>Representing</i> |
|--|--|
| SHRI D. P. JAIN | Saru Smelting Pvt Ltd, Meerut |
| SHRI DAVINDER KUMAR JAIN | Aggarwal Metal Works Pvt Ltd, Rewari |
| SHRI RAJIV JAIN (<i>Alternate</i>) | |
| SHRI R. P. KESAN | KMA Ltd, Bombay |
| SHRI A. H. SABBHACHANDANI (<i>Alternate</i>) | |
| SHRI S. K. KHANDEKAR | Vanaz Engineers (Pvt) Ltd, Pune |
| SHRI DIPANKAR KIRTI | Directorate General of Supplies & Disposals, New Delhi |
| SHRI P. K. D. LEE | Ministry of Finance (India Government Mint, Calcutta) |
| SHRI A. K. MITRA | Neo Pipes & Tubes Co Ltd, Calcutta |
| SHRI G. R. K. MURTHY | Ministry of Defence (R & D) |
| SHRI I. N. BHATIA (<i>Alternate</i>) | |
| SHRI H. S. RAMACHANDRA | Hindustan Machine Tools Ltd, Bangalore |
| SHRI P. P. CHOPRA (<i>Alternate I</i>) | |
| SHRI A. SHANTHARAM (<i>Alternate II</i>) | |
| SHRI V. N. VENKATESAN (<i>Alternate III</i>) | |
| SHRI T. RAMASUBRAMANIAN | Directorate General of Technical Development, New Delhi |
| SHRI T. R. MOHAN RAO (<i>Alternate</i>) | |
| SHRI P. S. RAMASWAMY | Bhandary Metallurgical Corporation Ltd, Bombay |
| SHRI M. K. RAO | Indian Non-Ferrous Metals Manufacturer's Association, Bombay |
| SHRI P. B. RAO | Directorate of Warships Projects (Navy), New Delhi |
| SHRI K. R. NAIR (<i>Alternate</i>) | |
| SHRI D. K. SEHGAL | Leader Engineering Works, Jalandhar |
| DR P. D. SHARMA | Hindustan Copper Ltd, Calcutta |
| SHRI S. C. SIVARAMKRISHNAN | National Metallurgical Laboratory (CSIR), Jamshedpur |
| SHRI J. SRIDHARAN | Ministry of Steel and Mines |
| SHRI P. SRIRAM | Rapsri Engineering Industries Pvt Ltd, Bangalore |
| SHRI N. S. SURANA | Multimetals Ltd, Kota |
| SHRI N. G. RAMAKRISHNAN (<i>Alternate</i>) | |
| SHRI T. R. TAGORE | Ministry of Defence (DGI) |
| SHRI P. K. L. P. NIMANKAR (<i>Alternate</i>) | |
| SHRI TRILOK SINGH | The Indian Cable Company Ltd, Calcutta |
| SHRI S. K. GUPTA (<i>Alternate</i>) | |
| SHRI S. S. VAIDYANATHAN | J. B. Metal Industries Ltd, Bombay |
| SHRI Y. P. VIJ | Minerals & Metals Trading Corporation of India Ltd, New Delhi |
| SHRI K. DHAKSHINAMURTHY (<i>Alternate</i>) | |
| SHRI B. MUKHERJI, Director (Struc & Met) | Director General, BIS (<i>Ex-officio Member</i>) |

Secretary

SHRI JAGMOHAN SINGH
Deputy Director (Metals), BIS

Indian Standard

GLOSSARY OF TERMS RELATING TO COPPER AND COPPER ALLOYS PART 4 PROCESSING

0. FOREWORD

0.1 This Indian Standard (Part 4) was adopted by the Indian Standards Institution on 25 November 1986, after the draft finalized by the Copper and Copper Alloys Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 IS : 3288 (Part 1) covering terms for cast form and wrought form (main) was first published in 1965 and subsequently revised in 1973 and 1981. While reviewing the standard, the Sectional Committee decided to revise Part 1 and issue 7 more parts for making glossary more comprehensive by modifying the definition of several terms and by including many more terms commonly used in copper industry. The parts are:

Part 1 Material (*third revision*)

Part 2 Unwrought and cast form

Part 3 Wrought form

Part 4 Processing

Part 5 Heat treatment

Part 6 Finishes

Part 7 Dimensional surfaces and structural characteristics

Part 8 Packing

0.3 This standard is intended mainly to cover technical definition of terms relating to copper and copper alloys, and it does not necessarily include all the legal meanings of the terms. It is hoped that this standard will help in establishing a generally recognized usage for various terms encountered in the copper industry and eliminate any confusion which may sometimes arise due to individual interpretation of terms used in industry.

0.4 In the preparation of this standard, assistance has been derived from the following:

- 1) ISO 197 Copper and copper alloys — Terms and definitions
- ISO 197/1-1983 Part 1 Materials
- ISO 197/2-1983 Part 2 Unwrought products (Refinery shapes)
- ISO 197/3-1983 Part 3 Wrought products
- ISO 197/4-1983 Part 4 Castings
- ISO 197/5-1980 Part 5 Method of processing and treatment

issued by the International Organization for Standardization (ISO).

- 2) BS 1420 : 1965 Glossary of terms applicable to wrought products in copper, zinc and their alloys, issued by the British Standards Institution.
-

1. SCOPE

1.1 This standard (Part 4) defines commonly used terms on processing in the field of copper and copper alloys.

2. PROCESSING TERMS AND DEFINITIONS

2.1 Welded Joint — A joint between pieces of metal at faces rendered plastic or liquid by heat or pressure or both. A filler metal, whose melting temperature is of the same order as that of the parent material, may or may not be used.

2.2 Brazed Joint — A joint in which molten filler metal is drawn by capillary attraction into the space between closely adjacent surfaces of the metals to be joined. In general, the melting point of the filler metal is above 500°C, but always below the melting temperature of the parent metal.

2.3 Drawn Edges — Edges finished by drawing through a die.

2.4 Hand Straightened — The condition resulting from the straightening of rod, section or tube using hand operated tools.

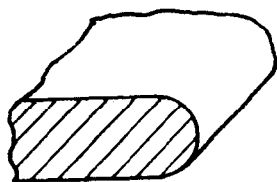
2.5 Machined Edges — Edges finished by planing, milling or shaping.

2.6 Reeled — The condition resulting from the straightening of round rod or tube by passing the product through a machine with rolls having special contours.

2.7 Rolled Flattened/Rolled Levelled — The condition resulting from flattening by passing plate, sheet or strip between a series of staggered rolls.

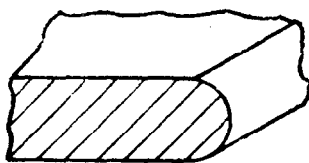
2.8 Rolled Edges — Edges finished by edge (side) rolling.

2.9 Rounded Corner (Radiused Corner) — A flat product with corner rounded.



2.10 Roller Straightened — The condition resulting from passing rod or tube between a series of staggered rolls.

2.11 Rounded Edge (Radiused Edge)



2.12 Stretch Straightened — The condition resulting from the flattening or straightening of rolled, extruded or drawn products by imparting the minimum permanent extension required to remove distortion.

2.13 Sawn Edges — Edges finished by sawing.

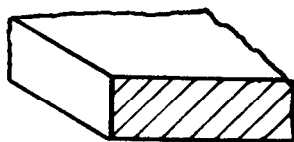
2.14 Sheared Edges — Edges finished by rotary shearing or guillotining.

2.15 Slit Edges — Edges finished by slitting process.

2.16 Semicircular Edge



2.17 Square Edge



2.18 Scalped Stock (for Other than Tube) — Stock intended for further fabrication from which the surface has been removed by machining to improve the quality of the final product.

2.19 Scalped Stock (for Tube) — Stock intended for further fabrication from which the surface has been removed by drawing through a die provided with a cutting edge.

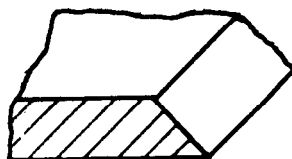
2.20 Shaved Rod — Wire rod from which the surface has been removed by drawing through a die provided with a cutting edge.

2.21 Temper — The condition produced in a product by mechanical and/or thermal treatment and defined by specific mechanical properties.

2.22 Tempered Rolled — The condition resulting from rolling annealed sheet or strip the minimum amount to impart some stiffness.

2.23 Unsheared Edges — Edges resulting from rolling to final thickness.

2.24 Bevelled Edge



BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones: 323 0131, 323 3375, 323 9402

Fax : 91 11 3234062, 91 11 3239399, 91 11 3239382

Telegrams : Manaksanstha
(Common to all Offices)

Central Laboratory:

Plot No. 20/9, Site IV, Sahibabad Industrial Area, SAHIBABAD 201010

Telephone
8-77 00 32

Regional Offices:

| | |
|---|-----------|
| Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002 | 323 76 17 |
| *Eastern : 1/14 CIT Scheme VII M, V.I.P. Road, Maniktola, CALCUTTA 700054 | 337 86 62 |
| Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022 | 60 38 43 |
| Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113 | 235 23 15 |
| †Western : Manakalaya, E9 Behind Marol Telephone Exchange, Andheri (East), MUMBAI 400093 | 832 92 95 |

Branch Offices:

| | |
|--|------------|
| 'Pushpak', Nurmohamed Shaikh Marg, Khanpur, AHMEDABAD 380001 | 550 13 48 |
| ‡Peenya Industrial Area, 1st Stage, Bangalore - Tumkur Road, BANGALORE 560058 | 839 49 55 |
| Gangotri Complex, 5th Floor, Bhadbhada Road, T. T. Nagar, BHOPAL 462003 | 55 40 21 |
| Plot No. 62-63, Unit VI, Ganga Nagar, BHUBANESHWAR 751001 | 40 36 27 |
| Kalaikathir Buildings, 670 Avinashi Road, COIMBATORE 641037 | 21 01 41 |
| Plot No. 43, Sector 16 A, Mathura Road, FARIDABAD 121001 | 8-28 88 01 |
| Savitri Complex, 116 G. T. Road, GHAZIABAD 201001 | 8-71 19 96 |
| 53/5 Ward No. 29, R. G. Barua Road, 5th By-lane, GUWAHATI 781003 | 54 11 37 |
| 5-8-58C, L. N. Gupta Marg, Nampally Station Road, HYDERABAD 500001 | 20 10 83 |
| E-52, Chitaranjan Marg, C-Scheme, JAIPUR 302001 | 37 29 25 |
| 117/418 B, Sarvodaya Nagar, KANPUR 208005 | 21 68 76 |
| Seth Bhawan, 2nd Floor, Behind Leela Cinema, Naval Kishore Road, LUCKNOW 226001 | 23 89 23 |
| Patliputra Industrial Estate, PATNA 800013 | 26 23 05 |
| T. C. No. 14/1421, University P. O. Palayam, THIRUVANANTHAPURAM 695034 | 6 21 17 |
| NIT Building, Second Floor, Gokulpat Market, NAGPUR 440010 | 52 51 71 |
| Institution of Engineers (India) Building, 1332 Shivaji Nagar, PUNE 411005 | 32 36 35 |
| *Sales Office is at 5 Chowringhee Approach, P. O. Princep Street, CALCUTTA 700072 | 27 10 85 |
| †Sales Office is at Novelty Chambers, Grant Road, MUMBAI 400007 | 309 65 28 |
| ‡Sales Office is at 'F' Block, Unity Building, Narashimaraja Square, BANGALORE 560002 | 222 39 71 |